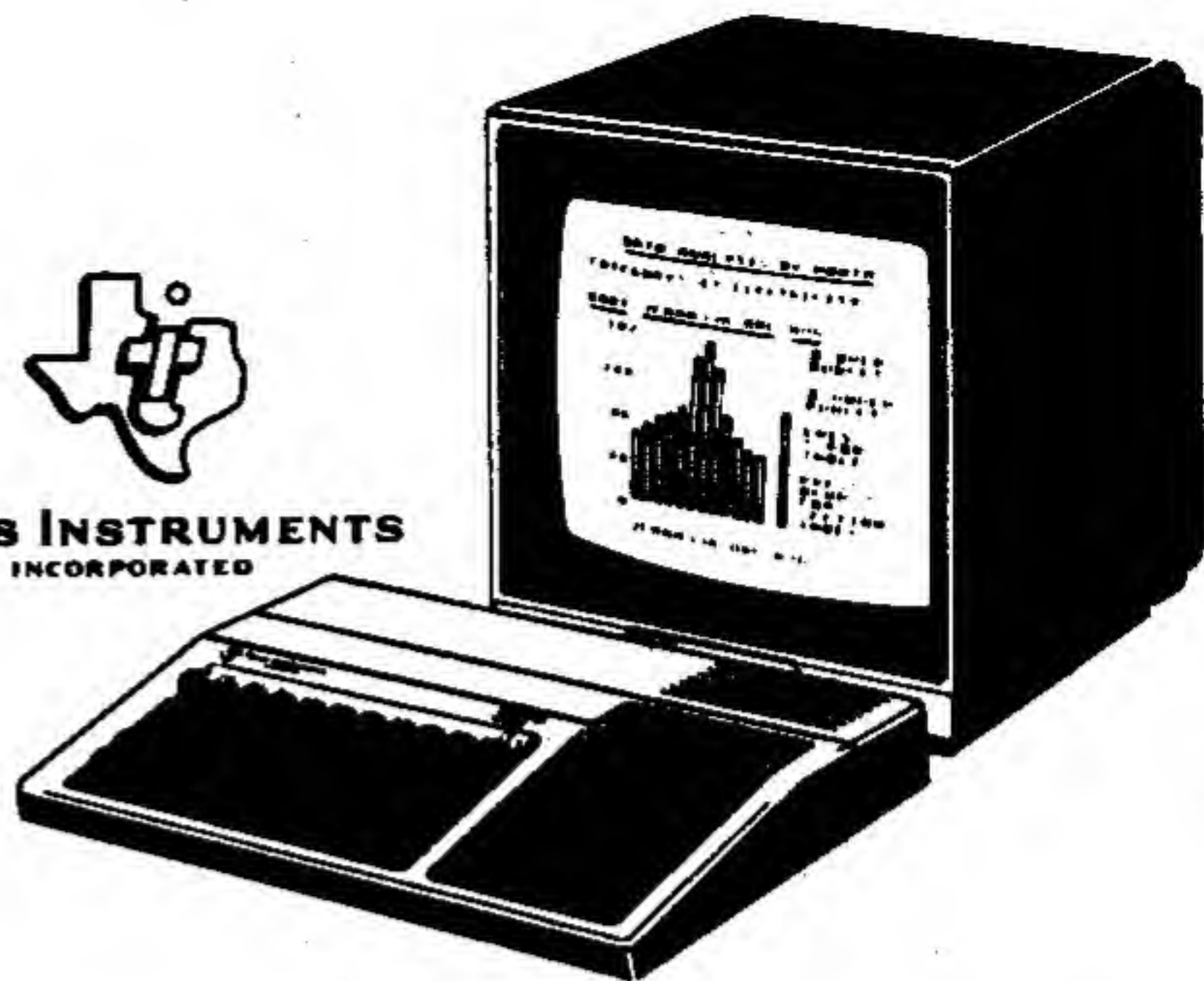


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Contributions to UNOFFICIAL are very much welcome. We like to print a variety of programs which will be helpful, fun, educational and mind puzzling for other UNOFFICIAL readers.

Programs submitted must be on tape only. Disk programs can be handled, but they take more time to get to. We do not have time to 'key in' programs that are submitted on paper. All programs must be accompanied by a detailed instruction guide, and an editorial commentary for all other information that you feel is necessary. The more written the better. All correspondence must be typed, or hand printed.

We do pay for quality submissions, based on several criteria. Remuneration is small at the moment, but will increase as circulation does. Those wishing remuneration must so state when making submissions.

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The consumer assumes complete responsibility for any decisions made or actions taken based on information obtained using any programs in this publication.

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UNOFFICIAL 99/4(A)

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UNOFFICIAL 99/4(A)

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Copies of back issues are available even though numbers are few and some issues are only Xerox copies. There is no difference between the Xerox and the original in quality; you will enjoy both.

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EDITORIAL.

I hope that you had a very good festive season and feel refreshed for the 1984 season of UNOFFICIAL. Christmas is about the only time during the year that is an exciting period and gives you a few more hours to program and play on your computer. Christmas is also a time to give, I only hope you gave the gift of computing to someone that you love.

In 1984 UNOFFICIAL hopes to bring to your door a wider range of items. This growth is made possible because of your support and assistance by filling out the questionnaire at the back of each issue. This feed back helps me know what you want so I can steer in that direction.

Starting this year is a Turtle Talk column for those of you who have LOGO or LOGO II. If you do not know what LOGO is and what it can do for your children

then you will find Turtle Talk fascinating and informative.

In this issue are articles by two new contributing editors. You will be familiar with Bob Parker through his two part article on the Mini-Memory that was printed last year. Now he carries us to greater heights with the Mini-Memory. The other contributing editor is Desmonde Muleahy who will be taking a three part look at TI-Writer. UNOFFICIAL welcomes these two editors to the ranks of UNOFFICIAL and hopes that if you have any thoughts on what they say to write in and all mail will be forwarded.

I hope you enjoy this issue and feel confident that UNOFFICIAL will stay with you now that TI has quit the home computer market.

###

=====

LETTERS

Dear Editor:

I'm glad you made a 1983 index for UNOFFICIAL 99/4(A), but a word to the wise don't put your order form on the back page of it. For if you do we'll just be mailing the needed index back to you! You should put the order form on a separate sheet of paper by itself. This is why I printed out my own order form.

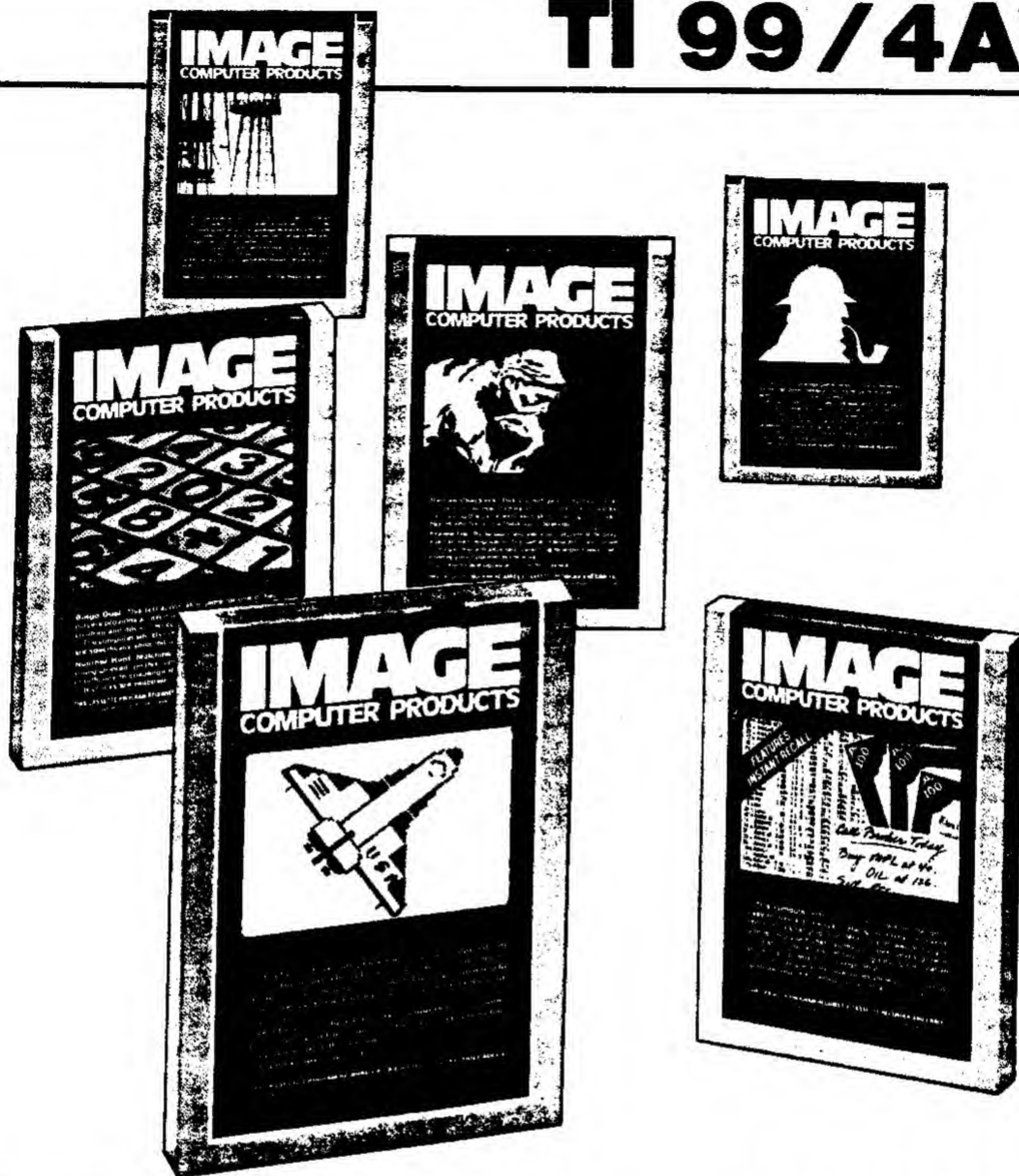
Even though Texas Instruments

dropped the 99/4A, are you still going to publish your UNOFFICIAL 99/4(A), I hope so! Also do you know if third party software companies are still going to make things for the TI-99/4A?

S. H. Manchester IV
33 Rosegarden St.
Warwick, RI 02888

UNOFFICIAL 99/4(A) JAN-FEB 1984

Put an IMAGE on your TI 99/4A*



Tournament Brick Bat 1004C(B)

This fast-action skill game may be played against the computer or with a friend. Choose competition mode and challenge another player. Or select the cooperative mode and work as a team while the computer acts as your opponent.

Whether you select solo play, competition, or cooperation, the computer keeps score and increases the challenge as your skill improves. Joysticks are required.

Wall Street Challenge 1002C(B)

This computer simulation of the stock exchange is easy to play and always challenging. Invest in several corporations ranging from Municipal Power and Light, a blue chip stock that usually provides steady growth, to Offshore Industries Limited, a high-flying speculative stock that is certain to change often.

Stock charts, and the Dow Jones show you the trends. Both 8K and 16K memory versions are included.

Wildcatting 1009C(B)

This computer program simulates a hidden oil deposit which you will try to find. Select a location on the map that looks promising. The geological survey will show the probability of striking oil below that spot and also estimate the cost per meter to drill.

Just like the professional wildcaters, try to strike oil early for maximum profits. The computer creates a different oil deposit each game and shows the view as you drill.

Strategy Pack I 1005C(B)

Roman Checkers. This ancient game has been a favorite for hundreds of years. It couldn't be easier to play, yet playing the game well takes skill, cunning, and strategy as you try to out-think your opponent.

Frame Up. Try to out-manuever your opponent or play against the computer in this game of wits and calculated strategy. You will alternate selecting numbers and controlling your opponents choices. Joysticks are optional.

Mind Master 1003C(B)

This classic strategy game takes on a new dimension as the computer designs the hidden problems and reports the results of each guess.

Multiple players may compete against the computer and each player may select the level of difficulty that matches their skill, ability, and patience.

This program also contains a formula for solving logic problems. Create the answer and watch the computer use deductive logic to discover the secret code.

Skill Builder I 1008C(B)

Bingo Duel. This fast-action skill game for one or two players provides an exciting challenge, because young children and adults can compete equally.

The computer adjusts to match your skill and problems are specifically selected to help you gain speed.

Number Hunt. Matching numbers is easy enough for young children, yet this computer game quickly advances in difficulty to challenge the experts. Joysticks are required.

* TI 99/4A is a registered trademark of Texas Instruments.

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put an
IMAGE
on your computer

we have made the decision to withdraw from the consumer home computer business. Production of the 99/4A hardware will stop in November, requiring significant personnel reductions in the consumer group."

TI had lost in the nine months up to November \$222.9 million dollars. Financially the company did well, except for the home computer division, and is experiencing an upturn in the semiconductor business. The integrated circuit is the bread and butter work that TI knows well and excels in.

The woes of TI all started back in August 1982 when TI started cutting the price of the 99/4A home computer to \$199.00 with rebate. To not be out done the other home computer manufacturers dropped their prices. This circle of price reduction carried on till the TI-99/4A was selling for \$99.00 with rebate. This low price is about \$15 to \$20 below the estimated production cost of the machine.

Why sell the computer below the manufacturing cost? Texas Instruments, and other companies, had hoped that the low price would encourage consumers to buy the machines then desire to expand what you had bought. Computer expansion is when you buy software, expansion box, extra memory, disk drive or a printer. The expansion items, hopefully, carry a higher profit margin to offset the loss on the machine.

For a while the plan that TI had devised did work and sales increased dramatically. The increase in sales not only worked for TI but also for companies that sold Vic-20, Commodore 64, Radio Shack Color Computer and the Sinclair ZX81.

As 1982 moved to a close the computer boom was already on a decline leaving TI and other computer manufacturers with bloated inventories whose value had to be written down, or off the books completely.

In February 1983 TI had the misfortune to have a design flaw in the power transformer that caused shipment to be halted for a month. TI has never really recovered from the price wars and continued to shoot itself in the foot by not allowing third parties access to the module side of the 99/4A and not

releasing any architectural information that would allow for exciting programming and programs.

One of the problems facing TI customers is that TI has sharply cut back on shipments of its specially promoted package of home computer peripheral devices, namely the PHB 4000 disk system. Now with the curtailment of the 99/4A it is doubtful that TI will continue to manufacture any hardware. With this curtailment right before Christmas many retail stores and distributors will run short before December.

The package deal (consisting of the Expansion Box, Disk Drive, Disk Controller, 32K Memory Card, and one software package) had caused no small stir among TI-99/4A owners. Several shops in the Houston area ran dry in a matter of weeks of the package coming on the market. Will you be able to order this package and get it? Doubtful at best. Unless you can actually see the package before you buy it, I doubt if you will get one.

What does the future hold now that TI has removed itself from the home market? Hopefully third party companies will see that there is a market and move in replacing TI in the hardware business. At the moment you can buy stand alone disk drives, plug-in extra memory, plug-in RS-232 interface port and a modified expansion box (in England).

Hardware without software is of little use. What will the software companies do now and will TI continue to make and sell its modules. These two questions are the most important ones you need to have answers to. What if TI does not continue to make EX-BASIC, what about all the programs that need it to run? The software question is a perplexing one that will unravel as the days go by and TI decides what it will do.

The other question that you may have is will TI repair my computer if something goes wrong. TI seems to have a good track record for fixing equipment that is not in production.

I think that we can say that for the immediate future you will be able to carry on programming, playing games, and

teaching your children through educational programs and LOGO; but what about the future.

The future, with regard to your TI-99/4A, depends on several things, your computing needs, educational teaching requirements of your children, supply of quality software, repair facilities, and technology developments that will come in the future. Any drastic change in one category of the list above will make your 99/4A obsolete and may require you to think about buying a new computer.

A computer, like anything else, has a finite useful life and, even though it still works, needs to be replaced because of changing needs and requirements.

Technological changes are happening all the time. the Adam home computer offers a package word processor for about \$600.00. IBM has brought out the

P.C. JR which has no cord. When will the computer that you talk to come out and eliminate the keyboard? Changes in technology can make your 99/4A so slow that you feel that using it keeps you behind everyone else.

One day -in the future- you will wake up and find that there is no more software being made for the 99/4A and the magazines that you subscribe to will not accept your subscription renewal because they are closing down since there are so few 99/4 and 99/4A computer owners who are using them. Hopefully you would have moved on to another computer before that day comes as it surely must. That day is somewhere between five to ten years away.

###

COMPUTER APPRENTICES WORKSHOP

IN the last issue of UNOFFICIAL we started into the world of computer logic with a careful look at 'top down' structures and program control when using an IF <test> THEN <statements> ELSE <statements> -commonly known as an IF-THEN-ELSE statement. Let us have another look at this IF-THEN-ELSE statement from an other angle so as to have a firm understanding of it.

Have a look at the following statements:-

```
100 IF A=B THEN 200
```

```
100 IF A>=B THEN 94
```

```
100 IF (SIN(A))<=2^3 THEN 900
```

```
100 IF A<>(B/2^0.5) THEN 1000
```

Frequently the condition being tested for truthfulness is expressed as the relationship between the values of a pair of arithmetic expressions. In each of the preceding examples the relationship has been different.

There are six relationships we can use in TI and EX-BASIC. They are:-

Equal	=
Greater than	>
Less than	<
Greater than or equal to	>=
Less than or equal to	<=
Not equal to	<>

The names listed above are common among almost all computer languages. The symbols in the list are not as

universal as the names are, but are common enough not to worry about this fact.

The relational operators -listed above- have a lower priority than any of the arithmetic operators. This means that the truth of the relationship is tested after the values of any arithmetic expression have been determined.

So far all the examples have been dealing with numbers. Can these relational operators be used with letters or words? The answer is yes. To prove the point look in the appendix of the User's Reference Guide that was given you when you bought your TI-99/4A. In the appendix you will find a list of ASCII codes and what they are related to. Notice each letter has a value and that value increases from the letter A to Z.

The name ADAM has a lesser value than the name ADAMA. Therefore if you were sorting names into an order from less to higher value the list would start at names beginning with 'A' and carry on to those beginning with the letter 'Z'.

Try this if you still are not sure:-

```
90 DIM A$(5)
100 A$(1)="ADAM"
110 A$(2)="ADAMA"
120 A$(3)="ADAMS"
130 A$(4)="ADA"
140 A$(5)="ABRHAM"
145 FOR J=1 TO 4
150 FOR I=1 TO 4
160 IF A$(I)>A$(I+1) THEN 170
ELSE 200
170 TEMP$ = A$(I)
180 A$(I) = A$(I+1)
190 A$(I+1) = TEMP$
200 NEXT I
210 NEXT J
220 FOR I=1 TO 5
230 PRINT A$(I)
240 NEXT I
250 END
```

This quick shell sort will prove that you can compare letters and words as you can numbers.

Looking back over the examples in this issue you will see that most do not have the ELSE option. The ability that ELSE gives you to choose one piece of code or another is extremely powerful. Without the ELSE option you would be reduced to using IF-THEN mainly to route the program where the needed code would be placed rather than executing the code directly -this is the case with TI-BASIC. This, of necessity, would locate the code remote from the text calling it. Program clarity is significantly reduced, speed is reduced, and memory usage is increased.

One of the interesting, and challenging, features of the IF-THEN-ELSE statements is the ability to 'nest' several statements together.

What is meant by the word 'nest'. The word nest means a group of things fitting tightly together and that is what you are doing. You are setting several IF-THEN-ELSE statements closely together more for the convenience and power it offers you. Of course, as with any type of so called advanced programming techniques, you can break any form of 'nesting' down into many simpler statements.

A theoretical example looks like this:-

```
100 IF (test 1) THEN (if test 1 true)
      IF (test 2) THEN (if test 2 is
        true ACTION X)
      ELSE (if test 2 is false ACTION
        Y)
      ELSE (if test 1 is false ACTION Z)
```

As you can see from this theoretical example you have two IF-THEN-ELSE statements that have been nested. The ELSE is under the IF that it is related to, this is done for clarity.

If test 1 is false then ACTION Z is done. If test 1 is true then you execute test 2. If test 2 is true then ACTION X is carried out. If test 2 is false then you will do ACTION Y.

What these actions could be we have covered earlier in this article. Of course if you do not have EX-BASIC you can not do as elaborate nesting as you

could do if you had it.

Let us look at a proper example of this:-

```
100 INPUT A
110 INPUT B
120 IF A>9.99999 THEN IF 11.
0001>=B THEN PRINT "ACTION X
" ELSE PRINT "ACTION Y" ELSE
PRINT "ACTION Z"
130 END
```

If you only have TI-BASIC then you would have to write the same program in this manner.

```
100 INPUT A
110 INPUT B
120 IF A>9.99999 THEN 130 EL
SE 180
130 IF 11.0001>=B THEN 140 E
LSE 160
140 PRINT "ACTION X"
150 END
160 PRINT "ACTION Y"
170 END
180 PRINT "ACTION Z"
```

Program control is where you will make or break a program. By using a nesting technique you can improve the quality of your programs. As is the case with many program control instructions, the power is better realized in other higher level languages like COBOL, PL/1, or PASCAL. However, do not wait to learn them but get into the habit now.

Another part of the IF-THEN-ELSE statement is the fact that you can test for more than one condition before changing the normal sequential order of executing instructions. For example, suppose that we wish to see if the value X lies between 0.5 and 1.79. If it does then we want the next instruction to be executed to be 500, and if not, we want to carry on with the next instruction. In EX-BASIC the statement would look like this:-

```
100 IF X>=0.5 AND X<=1.79 TH
EN 500
110 ..... Next Statement
```

In order for the entire condition to be true, both relationships must be true. If either or both are false, then statement 110 will be executed. You could have wrote the statement in an other way:-

```
100 IF X<0.5 THEN 120
110 IF X<=1.79 THEN 500
120 .... Next Statement
```

Now suppose that you want to go to statement 500 only if X lies outside the range of 0.5 to 1.79. A sufficient condition is that either $X<0.5$ or $X>1.79$ Written properly you would have:-

```
100 IF X<0.5 OR X>1.79 THEN 500
110 .... Next Statement
```

If one OR both of the statements is true then statement 500 would be executed, otherwise statement 110 is next.

In EX-BASIC we use the well known terms of AND & OR as used and spelled above. In TI-BASIC you have the ability to use the AND & OR relationships, but use TI's own method of doing it.

For a logical AND you use a multiplication sign, and for the logical OR use an addition sign. Using the previous examples it would look like this:-

For the logical AND relationship.

```
100 IF (X>=0.5)*(X<=1.79) THE
N 500
```

For the logical OR relationship

```
100 IF (X<0.5)+(X>1.79) THEN
500
110 .....Next Statement
```


Why and how TI came up with this form of notation is one of the many mysteries that will stay inside TI. The only drawback from using the TI-BASIC AND & OR is that it is confusing and can lead to difficulties when debugging the program. Since there is nothing that you can do about this strange nomenclature, just learn to live with it.

The EX-BASIC offers two more logical operators than you get in TI-BASIC. EX-BASIC gives you the logical command 'NOT' and 'XOR'.

Let us look at 'NOT' first. Sometimes, for sake of clarity or convenience, you might want to test a condition to see if it is not true, that is, false. For example if the relationship ($Z > 20$) is true then the relationship ($Z \leq 20$) must be false. To write that in EX-BASIC we can say:-

Example #1

```
100 IF Z>20 then 500
110 ... Next Statement
```

Rewritten using the 'NOT' command the previous line looks like this:-

Example #2

```
100 IF NOT Z<=20 THEN 500
```

In example #1 we are using conventional logical thinking about how we want the program to flow. The type of thinking we are using in example #2 sometimes is called reverse logic. Reverse logic is when we look for the false state of a relationship to be true.

Can this reverse logic really help? There are not too many places you will find reverse logic of any type in use. One of the reasons for not finding it is the fact that it is only used in a few places and that results in persons who are not familiar programming with it. Another reason against the use of reverse logic occurs when you want to expand a program you did not write and uses reverse logic. Program life and

reuseability are very important.

The 'XOR' logical relationship operator is not found in all home computers or in all main frame languages.

As the name implies the eXclusive OR -XOR- is related to the regular logical OR operator. In the ORs' case the relationship is true if one OR both clauses is true. With the eXclusive OR the relationship is true only if one clauses is true. We have become more exclusive what must happen for the relationship to be true.

The use of the XOR logical operator, as with all the others, will increase as you write and develop harder and more complex programs. The AND & OR logical operators will be the ones you will use and become familiar with the most. There are other logical operators but not in TI or EX-BASIC.

That is is till the next time we meet.

###

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searching, sorting and correlating type programs. Even though a disk is a hundred times faster than tape at doing anything, large quantities of disk access can be time consuming. Aside from the time waiting waiting to get or place some information on your disk there is the constant wear and tear on your disk and disk drive.

Let us say you are working on a large mailing list and you have to update 200 data entries. Two hundred is not a lot even for a small store. Your 200 entries equal two hundred searches, finds, and displaying of the information. Then you have two hundred searches and replacing the updated data back into the same location. You are now talking about four hundred disk accesses. If the average disk access time is 10 seconds, that is assuming that you have a large amount of data, then you will spend one hour and six minutes waiting while the disk system works finding or placing data on your disk.

Since time is money and waiting on a disk system is wasting money, enter the RAM disk.

By loading all your files into memory at the beginning of each session, you can then access the same files as before but now at a much faster rate and without and wear and tear on your disk and disk drive. When you are ready to end and go home just remember to copy the files from memory back onto your disk. If you forget to copy the data and turn the power off, oh well...

The increase in speed can be as much as a few thousand times faster than you were having when you were using a disk. The increase in speed depends on the type of file work you are doing. Let us be conservative and say we get a thousand fold increase in speed in your system. Now the time for four hundred disk accesses is reduced from a little over one hour down to four seconds. You have effectively eliminated waiting for the computer to find or replace a file.

The key to using the extra memory that you have as a RAM disk is usually in the software that you buy. In the case of the TI-99/4A and the 128K foundation card there had to be some extra help, and it came in the form of

the DSR chip.

First there is hardware which is the representing of data structures and algorithms with physical devices. Then there is software which is the representing of data structures and algorithms by programs and data structures in some other programming language. Now we have firmware which is the representing of data structures and algorithms by microprogramming a suitable hardware computer. The firmware we are talking about comes in the form of a preprogrammed chip called the DSR.

The DSR chip belongs to the family of EPROMs', that is Erasable Programmable Read Only Memory. An EPROM can be programmed to function as you wish, as is the case with the DSR chip. However, unlike a RAM chip the EPROM can have its memory cleared by exposure to ultraviolet light. Hence the strict warning against leaving the DSR chip uncovered in sun light. Assuming that the DSR chip is in fact an EPROM is based on the light warning. Foundation could have used a PROM, but once that chip is programmed there is no way that you can reverse the action. UNOFFICIAL is assuming the DSR to be a EPROM chip.

The documentation that you get with the 128K card notes several interesting features that Foundation had to invent so that you could use the extra memory as a RAM disk.

Foundation decided to make each file fixed length, random access, and in update mode. Each parameter has an argument for and against, Foundation chose a good format that can cover most file applications. The fixed length can range from 4 to 255 bytes and can be either 'internal' or 'display' format. The documentation states that to open a file in any other fashion can cause problems.

The fixed length of each record causes another hurdle to climb over and that is you will not get any warning that you are trying to access a file outside the file range. To avoid a DSR error code being returned, then you need to calculate the maximum number of records that you will have and never try to access a file over this number.

The final item that you must be

LOOKING AT 128K

Since TI got into the home computer market basically all the hardware has come from Texas Instruments itself. Only recently have we been allowed to buy third party hardware by the entrance of several companies into the world of the TI owner. Since TI left the world of plug in accessories and progressed to the expansion box several companies have started to make their own plug in accessory. To be able to buy a 32K module that plugs into the 99/4A without the necessity of the big box is a boon for those who want the extra memory without the extra cost.

One company, at the moment, has tried to offer the 99/4 and 4A owner something above just a copy of some TI hardware. Foundation (74 Claire Way Tiburon, CA 94920 (415) 388-3840) came out with a 128K memory card that plugged into the expansion box. There is about two good reasons for buying such a large card. First, the price is only a few dollars more than the TI 32K card, and secondly Foundation offered a DSR option that allowed you to use part of the memory as RAM memory.

The basic 128K card comes in a very ruggedly constructed case that fits nicely into one of the slots in the expansion box. The card does not have the runners at each end of the card as does TI and some other makers cards have. The runners help keep the card in place and in contact with the bus that runs the length of the box. Unless you are going to drop the expansion box, put it on the back seat of your motor bike, or some other sudden shock treatment, you should not worry about the lack of runners on Foundations card.

Once plugged in and your system going, you will notice that Foundation does not use a TI yellow light, instead you have a pleasant green light to show you that the 128K card has power.

Even though you have bought 128K of memory, you can only access 32K of your extra memory when using TI and EX-BASIC. If you intend to stay with store bought programs, TI LOGO, PILOT and BASIC then maybe Foundation's 128K card is not for you.

To use the full power of Foundation's 128K card then you have to enter the world of assembly language. Foundation divided their 128K into four identical 32K banks. Each 32K bank looks like the 32K that TI sells and that opens up the door for you to exchange, or swap, 32K banks as you need to. Foundation supplies all the necessary literature to exchange 32K banks in some detail. If you are not familiar with technical computer talk, you will be lost before reading all that Foundation sends you.

Unless you are familiar with what Foundation is telling you in their literature, you will get lost under a ton of technical fact. Most users will find several well written examples of more use than pages of words. Program examples will cover more ground and help more buyers than anything else Foundation could send. There are no program examples and this is a great pity.

If you are not into Assembly programming but are interested in data base work then you can buy the DSR option.

Inside the 128K card are several chip positions still empty. The optional DSR (Device Service Routine) firmware chip allows you to use the 96K of memory that you can not access while using a basic program.

Let us diverge for a moment and have a look at a RAM disk. If you have a fully expanded 99/4A system and use it for business applications then you will be using your system for a lot of

aware of is the 'MEMINT' pseudo-file. It seems that you must call this file at the beginning of each program because it initializes a "first-time flag" for the MEM96 software.

What we are seeing are three potentially serious problems overcome by the use practical programming and knowing the limitations of what you are working with.

One very interesting facet of the 128K card is that you can break the card into several small cards. The 'extra' memory that you have does require some of this memory to be used in housekeeping type work. In fact you loose the top 8K of memory to house keeping functions. Foundation calls the file that uses the 88K remaining memory MEM96.

If you want to split the 88K (or 11 blocks of 8K) of memory left into smaller files you can. You can look at the 88K of memory as three files, MEM96A, MEM96B, and MEM96C. MEM96A and MEM96B have 32K of memory while MEM96C only has 24K. The sizes and names are all chosen for you.

Of course you can not use MEM96 and any other file because you do not have the memory space.

Let us look over a simple program:-

```
100 OPEN #10:"MEMINT",FIXED 1
0
110 CLOSE #10
120 RECSIZE=64
130 MAXREC=4*INT(8192/RESIZE)
140 CALL CLEAR
150 PRINT "IS THIS TO BE PRIN
TED ON THE SCREEN ?
160 INPUT Q$
170 IF (Q$="Y")+(Q$="N") THEN
190
180 GOTO 140
190 OPEN #10;"MEM96A",FIXED R
ECSIZE, INTERNAL, RELATIVE
200 CALL CLEAR
210 PRINT "<ENTER> REC' NUMBE
R "
220 INPUT RECNUM
230 IF RECNUM<1 THEN 400
240 IF RECNUM> MAXREC THEN 25
0
250 CALL CLEAR
```

```
260 PRINT "RECORD NUMBER TOO
LARGE."
300 GOTO 200
310 IF Q$="Y" THEN 350
320 INPUT #10,RECNUM:A$
330 PRINT A$
340 GOTO 210
350 CALL CLEAR
360 PRINT "<ENTER> YOUR TEXT
370 INPUT A$
380 PRINT #10,REC RECNUM:A$
390 GOTO 210
400 CLOSE #10
```

This program is a very basic program that allows you to write and read files from MEM96A. There is no save feature in this program.

The first two lines of the program is where MEMINT is initializing a "first time flag".

Line 120 states the size of each record will be 64 bytes long. line 130 calculates the maximum number of records that can be squeezed into MEM96A. Line 240 checks that the record that we want is in the range of MEM96A with the parameters as set.

It is a simple example to show that there is nothing magical about a RAM disk. You read and write to it and perform all the tricks you can do with a floppy disk system.

The next example is a little more complex in that you load data from your disk to MEM96A before you do your work.

```
100 OPEN #10:"MEMINT",FIXED
10
110 CLOSE #10
120 RECSIZE=64
130 MAXREC=11*INT(8192/RESIZ
E)
140 OPEN #1;"LIBLIST",FIXED
64,INTERNAL,RELATIVE
150 OPEN #2;"MEM96",FIXED RE
CSIZE,INTERNAL,RELATIVE
160 FOR I=1 TO MAXREC
170 INPUT #1,REC I:A$
180 PRINT #2,REC I:A$
190 IF EOF(1) THEN 210
200 NEXT I
210 CLOSE #1
220 CLOSE #2
```



```

500 OPEN #2;"MEM96",FIXED RE
CSIZE,INTERNAL,RELATIVE
510 FOR J=1 TO MAXREC
520 INPUT #2,REC J:A$
530 PRINT A$
540 IF EOF(1) THEN 560
550 NEXT J
560 CLOSE #2
570 PRINT "PRESS <ENTER> TO
CONTINUE."
580 INPUT Q$
1000 OPEN #1;"LIBLIST",FIXED
64,INTERNAL,RELATIVE
1010 OPEN #2;"MEM96",FIXED R
ECsize,INTERNAL,RELATIVE
1020 FOR I=1 TO MAXREC
1030 INPUT #2,REC I:A$
1040 PRINT #1,REC I:A$
1050 IF EOF(2) THEN 210
1060 NEXT I
1070 CLOSE #1
1080 CLOSE #2
1090 END

```

This program will allow you to read data from a file called LIBLIST from disk into MEM96 (lines 100-220). Remember MEM96 is when you are using all 88K as one file, and 88K is 1108 records

64 bytes long. Once the file is in MEM96 it will be printed to the screen (lines 500-580). Finally the contents of MEM96 is then placed back into the disk file LIBLIST.

This is more an illustrative program of what you can do if you have the 128K card with the DSR option than a full blown program. The illustration is to show just how fast RAM disks are over conventional floppy disks.

If you are interested in buying a 128K card from Foundation be sure you know what is the delivery time for getting a card. Then Foundation started selling their 128K card the delivery date was moved back several times. Hopefully Foundation has improved on delivery time. If you have any questions the company seem to do their best and have an efficient secretarial system.

So far Foundation has not come out with any of their software that will be using all 128K. It will be interesting to see what the future holds for Foundation and their amazing 128K card.

###

#####

SEARCHING BY NAME

When ever you do not have a phone book handy you dial 1411 for local assistance, or 1-(XXX)-555-1212 for long distance assistance. You tell the operator the name of the city and then the persons' name. What if you are guessing at the name? The girls' name you met last night was Taylor, Tailor, Telor, Taylar, Taylar, etc... Can Ma Bell come through for you. Of course you remember her address but the last name has you in a panic.

Your ever faithful operator enters the name into a trusty computer (what

else) and gets a listing to the screen of every name that sounds like what you told the operator. Of course there are ways to narrow the field down by stating first name and address.

Name recognition by sound is a highly specialized field of computer science. Like all fields of computer science names by how they sound has a simple background.

It is the simple background that we will be looking at in this issues main program. By breaking down the alphabet into six fields of related letters you

can work to change names, or words into

GROUP	LETTERS
0	AEIOUHWY
1	BFPV
2	CGJKQSZ
3	DT
4	L
5	MN
6	R

An example would help to clarify what we are doing. Take the name LEYTON. With every name you take the first letter and then change the rest of the name into numbers.

LEYTON = L00305

From 'L00305' all the zeros and one of any duplicate numbers are removed leaving 'L35'. If the soundex rendition of the name LEYTON was longer than four characters it would be truncated to four characters. The benefit of using such a system comes when you can not remember a name, or your spelling is not quite correct. By using the soundex system you can find names that sound like the one you entered to search by.

Since this soundex program is using a very simple soundex system there are some shortcomings that more complex programs do not have. If you entered "phone" and wanted "fone" you would not get it. Trouble will also come with "Rogers" and "Rodgers", "tough" and "tuf". Even with some minor problems this soundex program works well with most words and proper names.

This example program is set up to deal with the simple creation of a name and address file and the searching through it by using a soundex search.

```
100 DIM E$(100),W(26),A$(100)
    (,B$(100),C$(100),D$(100),F$
    (100),G(100)
110 READ I=1 TO 26
120 READ W(I)
```

```
130 NEXT I
140 DATA 0,1,2,3,0,1,2,0,0,2
    ,2,4,5,5,0,1,2,6,2,3,0,1,0,2
    ,0,2
150 CALL CLEAR
160 PRINT "THIS PROGRAM SEARCHES BY USING A SOUNDEX SYSTEM."
170 PRINT
180 PRINT
190 PRINT
200 PRINT "REMEMBER TO LOAD IN YOUR DATA BEFORE SEARCHING."
210 FOR I=1 TO 10
220 PRINT
230 NEXT I
240 FOR J=1 TO 700
250 NEXT J
260 CALL CLEAR
270 PRINT " NUM OPERAT
    ION"
280 PRINT " === =====
290 PRINT
300 PRINT " 1 LOAD S
    EARCH FILE."
310 PRINT " 2 SEARCH
    ING BY"
320 PRINT " SOUNDE
    X."
330 PRINT " 3 CREATE
    A FILE."
340 PRINT " 4 SAVE F
    ILE."
350 PRINT " 5 EXIT."
360 FOR I=1 TO 10
370 PRINT
380 NEXT I
390 PRINT "<ENTER> YOUR NUMB
    ER."
400 INPUT Q
410 IF Q<1 OR Q>5 THEN 420 E
    LSE 470
420 CALL CLEAR
430 PRINT "NUMBER ERROR, TRY
    AGAIN"
440 FOR I=1 TO 600
450 NEXT I
460 GOTO 260
470 ON Q GOTO 480,1090,1600,
    1790,2220
480 CALL CLEAR
490 PRINT " NUM OPERAT
    ION"
500 PRINT " === =====
    ==="
510 PRINT " "
```



```

520 PRINT " 1          LOAD F
ILE FROM"
530 PRINT "          TAPE."
540 PRINT " 2          LOAD F
ILE FROM"
550 PRINT "          DISK."
560 PRINT " 3          USING
DATA"
570 PRINT "          STATEM
ENTS."
580 FOR I=1 TO 10
590 PRINT
600 NEXT I
610 PRINT "<ENTER> YOUR NUMB
ER."
620 INPUT Q
630 IF Q<1 OR Q>3 THEN 640 E
LSE 690
640 CALL CLEAR
650 PRINT "NUMBER ERROR, TRY
AGAIN."
660 FOR I=1 TO 600
670 NEXT I
680 GOTO 480
690 ON Q GOTO 700,820,940
700 CALL CLEAR
710 PRINT "MAKE SURE THAT YO
U HAVE THE CORRECT TAPE IN A
ND YOU ARE AT THE RIGHT PLAC
E ON THE TAPE."
720 FOR I=1 TO 12
730 PRINT
740 NEXT I
750 OPEN #2:"CS1",SEQUENTIAL
,INTERNAL,INPUT ,FIXED
760 FOR I=1 TO 100
770 INPUT #2:A$(I),B$(I),C$(
I),D$(I),F$(I),G(I),E$(I)
780 IF A$(I)="END" THEN 800
790 NEXT I
800 CLOSE #2
810 GOTO 260
820 CALL CLEAR
830 PRINT "FOR DISK DATA YOU
NEED TO KNOW BOTH THE DISK
NAME AND THE FILE NAME."
840 PRINT "<ENTER> DISK AND
FILE NAME."
850 PRINT
860 INPUT Z$
870 OPEN #11:Z$,SEQUENTIAL,I
NTERNAL,INPUT ,FIXED
880 FOR I=1 TO 100
890 INPUT #11:A$(I),B$(I),C$(
I),D$(I),F$(I),G(I),E$(I)
900 IF A$(I)="END" THEN 920
910 NEXT I

```

```

920 CLOSE #11
930 GOTO 260
940 CALL CLEAR
950 FOR I=1 TO 100
960 READ A$(I),B$(I),C$(I),D
$(I),F$(I),G(I)
970 IF A$(I)="END" THEN 990
980 NEXT I
990 J=0
1000 J=J+1
1010 Q$=A$(J)
1020 IF A$(J)="END" THEN GOT
O 1070
1030 VC=2
1040 GOTO 1170
1050 E$(J)=R$
1060 GOTO 1000
1070 VC=0
1080 GOTO 260
1090 CALL CLEAR
1100 PRINT "SOUNDEX ROUTINE"
1110 PRINT "-----"
1120 FOR I=1 TO 5
1130 PRINT
1140 NEXT I
1150 PRINT "<ENTER> SURNAME
YOU WISH TO SEARCH FOR."
1160 INPUT Q$
1170 L=LEN(Q$)
1180 S$=""
1190 R$=SEG$(Q$,1,1)
1200 ST=0
1210 IF L<2 THEN 1220 ELSE 1
270
1220 CALL CLEAR
1230 PRINT "NAME OF ONE CHAR
ACTER IS NOTACCEPTABLE. TRY
AGAIN."
1240 FOR I=1 TO 600
1250 NEXT I
1260 GOTO 1090
1270 FOR I=2 TO L
1280 C=ASC(SEG$(Q$,I,1))
1290 IF C<65 OR C>90 THEN GO
TO 1330
1300 C=C-64
1310 X=W(C)
1320 IF X<>0 THEN S$=S$&CHR$
(X+48)
1330 NEXT I
1340 L=LEN(S$)
1350 IF L=0 THEN GOTO 1410
1360 FOR I=1 TO L
1370 C=ASC(SEG$(S$,I,1))
1380 IF C<>ST THEN 1390 ELSE
1400
1390 R$=R$&SEG$(S$,I,1)

```



```

1400 ST=C
1410 NEXT I
1420 IF LEN(R$)>4 THEN 1430
ELSE 1440
1430 R$=SEG$(R$,1,4)
1440 IF VC=1 THEN 1970
1450 IF VC=2 THEN 1050
1460 FOR I=1 TO 100
1470 IF A$(I)="END" THEN 260
1480 IF E$(I)=R$ THEN 1490 E
LSE 1580
1490 IF I>1 THEN 1500 ELSE 1
510
1500CALL CLEAR
1510 PRINT A$(I); " ";B$(I)
1520 PRINT C$(I)
1530 PRINT D$(I)
1540 PRINT F$(I); " ";G(I)
1550 PRINT
1560 PRINT "PRESS <ENTER> TO
CONTINUE."
1570 INPUT Q$
1580 NEXT I
1590 GOTO 260
1600 CALL CLEAR
1610 PRINT "THERE IS A LIMIT
OF 100 NAMES AND ADDRES
SES."
1620 PRINT
1630 FOR I=1 TO 100
1640 PRINT "<ENTER> SURNAME.
"
1650 INPUT A$(I)
1660 PRINT "<ENTER> FIRST NA
ME."
1670 INPUT B$(I)
1680 PRINT "<ENTER> ADDRESS.
"
1690 INPUT C$(I)
1700 PRINT "<ENTER> CITY."
1710 INPUT D$(I)
1720 PRINT "<ENTER> STATE."
1730 INPUT F$(I)
1740 PRINT "<ENTER> ZIP."
1750 INPUT G(I)
1760 IF A$(I)="END" THEN 1790
1770 CALL CLEAR
1780 NEXT I
1790 CALL CLEAR
1800 PRINT " NUM OPERA
TION"
1810 PRINT " === =====
====="
1820 PRINT
1830 PRINT " 1 SAVE
ON A TAPE."
1840 PRINT

```

```

1850 PRINT " 2 SAVE
ON A DISK."
1860 FOR I=1 TO 10
1870 PRINT
1880 NEXT I
1890 PRINT "<ENTER> YOUR CHO
ICE."
1900 INPUT Q
1910 J=0
1920 J=J+1
1930 Q$=A$(J)
1940 IF A$(J)="END" THEN GOT
O 1990
1950 VC=1
1960 GOTO 1170
1970 E$(J)=R$
1980 GOTO 1920
1990 VC=0
2000 ON Q GOTO 2010,2100
2010 CALL CLEAR
2020 PRINT "SAVING DATA ONTO
A TAPE IS SIMPLE IF YOU FO
LLOW DIRECTIONS."
2030 OPEN #2:"CS1",SEQUENTIA
L,OUTPUT,DISPLAY ,FIXED
2040 FOR I=1 TO 100
2050 PRINT #2:A$(I),B$(I),C$
(I),D$(I),F$(I),G(K),E$(I)
2060 IF A$(I)="END" THEN GOT
O 2080
2070 NEXT I
2080 CLOSE #2
2090 GOTO 260
2100 CALL CLEAR
2110 PRINT "SAVING DATA ONTO
A DISK REQUIRES THE DISK NA
ME AND FILE NAME."
2120 PRINT
2130 PRINT "<ENTER> DISK AND
FILE NAME."
2140 INPUT Z$
2150 OPEN #12:Z$,SEQUENTIAL,
INTERNAL,OUTPUT,FIXED
2160 FOR I=1 TO 100
2170 PRINT #12:A$(I),B$(I),C
$(I),D$(I),F$(I),G(I),E$(I)
2180 IF A$(I)="END" THEN GOT
O 2200
2190 NEXT I
2200 CLOSE #12
2210 GOTO 20
2220 STOP
2230 END

```

The heart of the program are lines 1150-1430. On these lines lies the

soundex routine. With a clear understanding or these few lines will allow you to adapt this idea to anything that you have in mind that can use searching by soundex.

Having a soundex routine is an advantage only when you do not know the

spelling of a name. If you have the correct name and address then you can use cross searching which will get you the exact person far more accurately and quickly than will soundex.

Have fun sounding out your names.

###

REVIEW & VIEWS

In this issue we are going to look at several games and then go and have a look at a few of the books that you can find on the TI-99/4A home computer.

Starting off the game reviews is a game from Gem Software (8336 Cheviot Road Cincinnati, Ohio 45239). This company has come out with two interesting games called Eagle Base and Super Frog.

In this issue we will be looking at Eagle Base. Eagle Base comes with a tape that has a back up copy on the reverse side and four pages of information on how the game is to run. In Eagle Base you have two games. Alien Attack and Blast'em. The first of the two is the main game while Blast'em is similar to Alien Attack without any of the fancy information that you get with Alien Attack.

Once the tape is loaded and RAN then you are faced with several selections; choice of game, number of players, choice of ship size, military rank and control input. Once the information is entered then up comes a screen that tells you in which sector (there are eight sectors) the enemy is. In each sector there are five magnification levels (X1-X5 with X1 being the closest to you). Select which sector you want to work in and then enter the magnification level. An interesting feature of the game is that if you enter level four, you also get level five. IE two levels at one go.

This allows you a better chance of getting rid of the aliens in less time.

When the game starts you first see the alien space ships all over the place each ship moving on its own path. Once all the aliens are on the screen up comes the Eaglesight. The Eaglesight is an area that defines where your missiles will go. The Eaglesight is very maneuverable and can over take a space ship in a race. To eliminate a space ship get the Eaglesight over the craft and hit the fire button on your joy sticks. Of course your timing is most important so as to get the craft inside the Eaglesight at the right time. One of the helpful hints given you is to fire when a Gloomie is leaving rather than entering the Eaglesight.

The game is spent moving the Eaglesight over the screen chasing Gloomie space ships and shooting them down. By pressing the letter 'F' you get back the screen with information of the eight sectors, where the aliens are, and how well you are doing. There is a strategy to this game, but it is tough to think of one when there are Gloomies all over the place.

The more time you take eliminating the Gloomies from one level allows them to progress into levels nearer you. Oh yes, the Gloomies fire at you and can shoot down your five defensive shields.

This is a pleasant game that has features to give you a decent run for your money. About the only short coming

experienced was the moving of the Eaglesight vertically would not happen. In some games it did, but not all the time. The problem may well rest in the TI joy sticks that are used.

Blast'em is very good practice for Alien Attack in that you keep shooting down aliens till you get them all, then more come. This can keep going on for a lone time so long as you keep shooting down aliens.

Even though the game is well thought out and has good color and graphics there is one thing that could be done to improve the game. To know how the Gloomies attack you and is there anything you can do about their attacks would be nice to know. That is a minor moan but the more about a game you know the more fun it becomes.

Yes this is an EX-BASIC game since you need sprite capabilities. Cost is \$15.95.

- - - - -

A program came in the mail called Speak & Baseball. The program is in TI-BASIC and requires the use of a Speech Synthesizer, Terminal Emulator II, and joysticks. Since UNOFFICIAL does not have a Terminal Emulator II it is not possible to run the program.

From the information given all the actions of a baseball game are done. You have three types of pitch, several ways of hitting the ball, running the bases and throwing the ball to any of the four bases. Of course there is a score board and strategy tips.

The Speech Synthesized and Terminal Emulator II are used in the umpire's calls and the verbal description of the game as it happens.

Since many TI home computer owners do not own the necessary extras there is a version that only requires the use of joy sticks and is called Basic Baseball.

Both versions cost \$14.95 and are available from H. P. Richard, 18 Fruitwood Drive, Burnt Hills, NY 12027

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In the last issue of UNOFFICIAL we reviewed a game called Treasure Hunt. We thought that it was an excellent

game that was a little above the average. Well Mirage Software has improved the game and come out with Treasure Hunt II. If you thought that the original Treasure Hunt was good then you will think that this game is excellent.

Treasure Hunt II is a four screen game that progresses from screen one to four. If you make it through all four screens then you come back to the first screen but life is a little faster and more is thrown at you. You can keep on doing this and progress through the levels to level eight. Remember that you only have four men to do all this running around with unless you make it through the fourth screen (chamber) when you will pick up an extra man.

As with the original version you have the option to play the game using joy sticks or keyboard, and with memory expansion or without.

The game comes on disk or cassette and requires EX-BASIC.

The first screen, or chamber, has four levels and to progress down the levels you have to pick up all the treasures on that level. Of course there are animals to stop you and spiders overhead. Going down the levels and you meet animals moving faster and life gets kind of hectic.

The second screen, or chamber consists of four rows of platforms onto which you must go to get the treasures. Again there are animals coming up from the bottom of the screen to stop you. Careful timing will get you through this chamber.

Screen, or chamber, three is a strange place to be. Fast action will get you through. Go slow here and forget it. This chamber has to be seen to fully understand it.

The last screen, or chamber, is tough to get through. There are five levels to work through with treasures to pick up and some very nasty 'things' to stop you. The animals come at you from both directions and at different heights. You either get done in at leg level or at head level: very nasty.

This game is exceedingly well put together. It makes full use of the color and graphic capabilities that the TI-99/4A has.

Treasure Hunt II will not disappoint you if you are after a game that will provide many hours of frustration, annoyance, anger, and a challenge. The cost to all is \$19.95.

There are new books for the TI-99/4A coming on the market all the time. Will this trend continue is debatable now TI has ended production of their home computer.

The first book we are looking at is called "The TI 99/4A User's Guide" by Carol Ann Casciato and Donald J. Horsfall and costs \$11.95 plus tax.

In the book there is a little information on the authors that gives you a clue to the books style and design. The authors are mainly dealing with big companies doing in-depth reports, research and manuals.

The User's Guide book covers about every aspect and question that you may have on the 99/4A home computer. The book ranges from connecting up your computer to the TV to the several languages that you can buy.

The biggest draw back to this book is the fact that most of the information covered is given you when you bought your 99/4A or is readily available from TI or a user group.

Overall "The TI 99/4A User's Guide" is an OK book but of little use if you have read all the books that TI supplies with the computer.

If you have \$5.95 to spend on a game book for the TI then this is it. "Terrific Games For the TI 99/4A" by Hal Renko and Sam Edwards. The book is small measuring about six inches square but it has thirty one (31) games in it.

The games range from short and simple to long and complex. There are TI and EX-BASIC so no one is left out. Each game has a small write up on it and the complete listing for you to type in. As with any game you may well want to improve the game. By having the listing you can do this.

The games range from Zombies in the Swamp, Parrot, Shakespearian Shuffle,

I.T. - The adventure of the Century, and so on.

This book is value for money if there ever was one.

Very few times in the life of a computer will come a book that is well done both outside and inside. "Programmers Reference Guide to the TI-99/4A" by C. Regena and costing \$14.95 is one such book.

The book is standard text book size but is spiral bound with a large spiral. This design allows you to open the book without breaking the back and getting pages all over the place after heavy use. Inside the book there are two printing styles used, a computer printout size for the programs and regular type for everything else.

The book starts off in the normal way, covering basic information that any beginner should have. Once into chapter three things get interesting. This chapter covers graphics and sound. Rather than give a few simple examples, the author gives some very detailed programs for you to run. If you ever wanted to draw a horse, this is the place to come to. Combining color with the graphics is also done in chapter three with several good examples.

The music part of this chapter will make any music teacher eager to get all the programs in and running. If you want a musical quiz the author has a program that is called Music Steps and Chords. The program is a long one so you better save as you go.

Each chapter is replete with excellent programs to teach you certain program ideas. All programs are practical rather than 'finger exercizes'.

The author assumes that you know about programming, or have worked through all the literature that TI has supplied, and now you want to get your teeth into something solid that does not think you are a moron. Regina does a grand job putting together a reference guide that should be close to every TI in the country.

Buy this one book, and you will never regret it. ###

LOGO II

If you are one of the lucky few to now have LOGO II then you must have gotten your large package in the past few months. LOGO II has long been promised and I expect many wondered if LOGO II was going to turn into an other empty TI promise. Well we now know TI did pull through right before the end.

If you notice the book TI LOGO is copyrighted for 1984. I wonder if you could have ran off several thousand copies since the copyright was post dated.

The book is full size and spiral bound for ease of use. About the most important chapter that a beginner should study is the first chapter. Saying the first chapter is the most important may sound redundant but when dealing with computer books you never know what you will be getting.

One of the most interesting thing about chapter one is that it tells you that even LOGO has an immediate mode, just like regular TI-BASIC. To fire up the LOGO II you enter:-

TELL TURTLE

On the screen you will see the friend of all children; the turtle. LOGO was and is designed for children to get a better grasp on mathematical ideas and not as a general purpose programming language.

Have you ever sat down with one of your children and described a square or a right angle triangle? In LOGO such describing is relatively easy and, more importantly, easy for a child to follow. Even if you are not mathematically inclined you and your child can grow together learning how to 'define' a specific shape.

Being able to state exactly what you are thinking of is an advantage. Who wants to hire a person who can not say or write what he/she is thinking of.

Starting out with simple definitions such as square, circle, etc help a child put ideas down on paper. As with any computer, if you get your idea wrong you try and try again. Trying and learning is half the fun of trying.

If all else fails, you and your child can go outside and act out what the turtle is doing with your commands. Actually walking out your own commands can give a child a better 'feel' for what is right and wrong with the program.

Try these short programs:-

```
TO BOX
CLEARSCREEN
REPEAT 4 [FORWARD 40 RIGHT 90
]
CIRCLE1
CIRCLE2
END
```

```
TO CIRCLE1
PENUP
FORWARD 18
RIGHT 90
FORWARD 3
LEFT 90
PENDOWN
REPEAT 36 [FORWARD 3 RIGHT 10
]
END
```

```
TO CIRCLE2
PENUP
LEFT 90
FORWARD 11
RIGHT 90
PENDOWN
REPEAT 36 [FORWARD 5 RIGHT 10
]
HIDETURTLE
END
```

A box with a circle inside the box and one outside touching the four corners of the box. ###

IN CLOSING ...

In closing a quick cover up had better be made. In the November-December issue mention was made to the "In Closing" section: there was none.

What was talked about was a tool that would 'save' the connectors in your game port. Navarone Industries (510 Lawrence Expressway #800, Sunnyvale, CA 94086) has had out a cartridge expander that fits into the game port of the 99/4A that can handle three modules. Of course there is a switch to allow you to move between the modules. Aside from a selector switch there is a reset button.

What having an expander does for you is cut down on the wear and tear of the game port connectors that will wear out one day soon, with heavy use. The cost of a Cartridge Expander is usually \$39.95

+++++

From TI (in Dallas and not good ol' Lubbock) came an important notice. If you have your copy handy let's compare notes. TI states that product service will continue. This continuation can be relied upon based on hand calculator experience.

For the software paragraph it reads like TI is not making any more software and is allowing stock to go to zero. If you have not bought it, you may not find it. The independent software publishers have stated what they think of the way TI dealt with them in the past. It is highly doubtful if there will be a flood of new TI software publishers any time soon.

When TI talks about peripherals it is never their own brand. TI says, "Many independent manufacturers of peripherals produce products designed to be compatible with the TI-99/4A." How many companies are making the Expansion Box?

At least TI is keeping their toll free line going. Use 1-800-TI-CARES to have any question answered that you may have.

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On an up beat note Tigercub Software (156 Collingwood Ave., Columbus, Ohio 43213) sent in several copies of their "Tips from the Tigercub" which are passed out to users groups.

This person, Jim Peterson, has over one hundred (100 !!) programs that are for sale. I really do not know how he does it unless he is single and owns a bank. If you want a catalog send in one dollar which is refunded on your first order.

Jim covers his philosophy about keeping prices down and about being fair and not copying his programs. On some of the old "Tips from the Tigercub" there are short programs that are of interest. If interested, write.

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Micro Computers Corporation may have sent you a list of all the things that they have for the 99/4A. The list is very large and makes you wonder where all the programs have been hiding.

Microcomputers Software has a Tiny LOGO for a price of \$13.50. There is a Hebrew version of Tiny LOGO for the same price.

What is most discouraging is the fact that along with TI games and learning programs are Apple, IBM, Commodore, and Atari games and programs.

For more information write to Microcomputers Corporation, 34 Maple Avenue/Box 8, Armonk, NY 10504

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Did you try and buy a second TI-99/4(A) before Christmas? It was a tough crowd after computers for 1983. If you managed to get one, you were one of the few who survived the fighting and grabbing that was not nice to watch let alone get involved with.

There is not a single TI-99/4A computer in any of the stores in San Antonio or Houston. At the low price of about \$50.00 the TI home computer went fast.

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